

Message

From: Davis, Eva [Davis.Eva@epa.gov]
Sent: 6/7/2016 8:49:25 PM
To: Wayne Miller [Miller.Wayne@azdeq.gov]; d'Almeida, Carolyn K. [dAlmeida.Carolyn@epa.gov]
CC: steve [steve@uxopro.com]
Subject: RE: 2016-6-7 - williams AFB -BStewart comments - arsenic EBR ST012

Actually reduction and oxidation are not the same thing. According to EPA's document on natural attenuation of arsenic, desorption can occur due to a change to reducing conditions. The reducing conditions being extended here should keep the arsenic dissolved. I think the biggest difference in this case is the size of the proposed remediation – I think this proposed quantity of TEA to be injected is far greater than the sulfate or oxidant injected at other sites, because there is far more contamination. ISCO and EBR are not usually used to try to remediate LNAPL, particularly this quantity of LNAPL. I think we have to consider that when trying to determine if the arsenic injection is going to be a problem.

From: Wayne Miller [mailto:Miller.Wayne@azdeq.gov]
Sent: Tuesday, June 07, 2016 3:39 PM
To: d'Almeida, Carolyn K. <dAlmeida.Carolyn@epa.gov>; Davis, Eva <Davis.Eva@epa.gov>
Cc: steve <steve@uxopro.com>
Subject: 2016-6-7 - williams AFB -BStewart comments - arsenic EBR ST012

Bo Stewart submitted a few thoughts on the Arsenic issue, and regulators' actions.

If arsenic issue is known and presented by AMEC previously, have agencies previously commented? Has Amec responded to arsenic-related comments? Did Amec collect arsenic data during the sulfate field test? Work Plan Appendix C did not include any.

Reduction is similar to oxidation. The EPA Engineering Issue, In-Situ Chemical Oxidation, August 2006 EPA/600/R-06/072, states,

"Remediation grade KMnO₄ has been developed containing minimal quantities of metal impurities. Chromium (Cr) and arsenic (As) have historically been the impurities of concern. Due to the low maximum contaminant level (MCL) in drinking water established by EPA for these metals (0.1 mg/L total Cr MCL; 0.01 mg/L As MCL) (U.S. EPA, 2002), injection of technical grade KMnO₄ may result in exceeding the MCL for these elements. Generally, natural attenuation of these metals has been achieved within acceptable transport distances and time frames. Due to the possibility of exposure pathways and potential receptors, monitoring of these parameters may be needed under some conditions."

The injection of sulfate is similar to permanganate as described above. This is a site-specific issue and the Work Plan mentions monitoring for arsenic but it does not provide any trigger points or contingencies.

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